Dell XPS 12

Owner's Manual

Computer model: XPS 9Q23
Regulatory model: P20S
Regulatory type: P20S001

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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2012 - 10 **Rev. A00**

Contents

Before You Begin

Turn Off Your Computer and Connected Devices

CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Save and close all open files and exit all open programs.

2. Follow the instructions to shut down your computer based on the operating system installed on your computer.
   - *Windows 8:*
     Move your mouse-pointer to the upper-right or lower-right corner of the screen to open the Charms sidebar, and then click **Settings**→ **Power**→ **Shut down**.
   - *Windows 7:*
     Click **Start** and click **Shut down**.

   Microsoft Windows shuts down and then the computer turns off.

   NOTE: If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all telephone cables, network cables, and attached devices from your computer.
5. Slide and hold the power switch for 5 seconds, after the computer is unplugged, to ground the system board.

Safety Instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

WARNING: Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

CAUTION: To avoid damaging the computer, ensure that the work surface is flat and clean.

CAUTION: To avoid damaging the components and cards, handle them by their edges and avoid touching pins and contacts.

CAUTION: Only a certified service technician is authorized to remove the computer cover and access any of the components inside the computer. See the safety instructions for complete information about safety precautions, working inside your computer, and protecting against electrostatic discharge.

CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the connectors and ports are correctly oriented and aligned.

CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

CAUTION: Press and eject any installed card from the media-card reader.

Recommended Tools

The procedures in this document require the following tools:

- Phillips screwdriver
- Torx #5 (T5) screwdriver

After Working Inside Your Computer

After you complete replacement procedures, ensure the following:

- Replace all screws and ensure that no stray screws remain inside your computer.
- Connect any external devices, cables, cards, and any other part(s) you removed before working on your computer.
- Connect your computer and all attached devices to their electrical outlets.

CAUTION: Before turning on your computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may damage your computer.

- Turn on your computer.

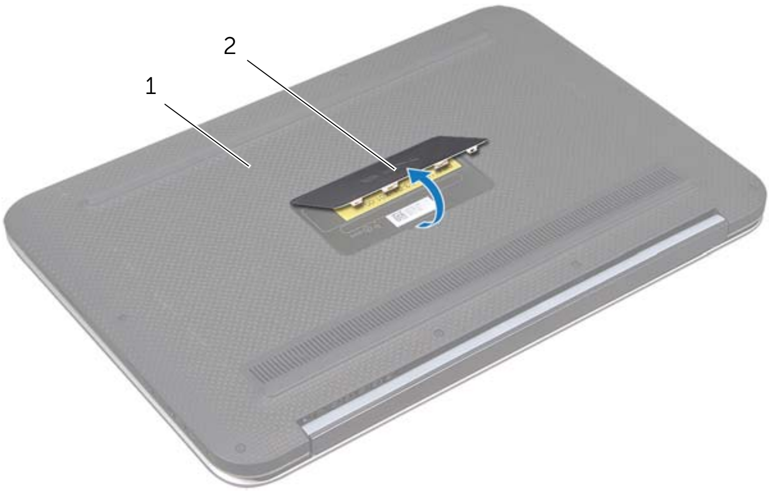
Removing the Base Cover

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Procedure

1 Close the display, and turn the computer over.

2 Turn the system badge over and place it on the base cover.



1	base cover	2	system badge

3 Remove the screws that secure the base cover to the palm-rest assembly.



1	screws (11)	2	base cover

4 Starting from the side of the computer, carefully pry the base cover.

5 Carefully lift the base cover at an angle and slide the base cover to release the power-switch slot from the power switch.



1	base cover

Replacing the Base Cover

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Procedure

1. Slide the power-switch slot into the power switch, and place the base cover on the palm-rest assembly.
2. Snap the base cover into place.
3. Replace the screws that secure the base cover to the palm-rest assembly.
4. Turn the system badge over and snap it into place.
5. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Battery

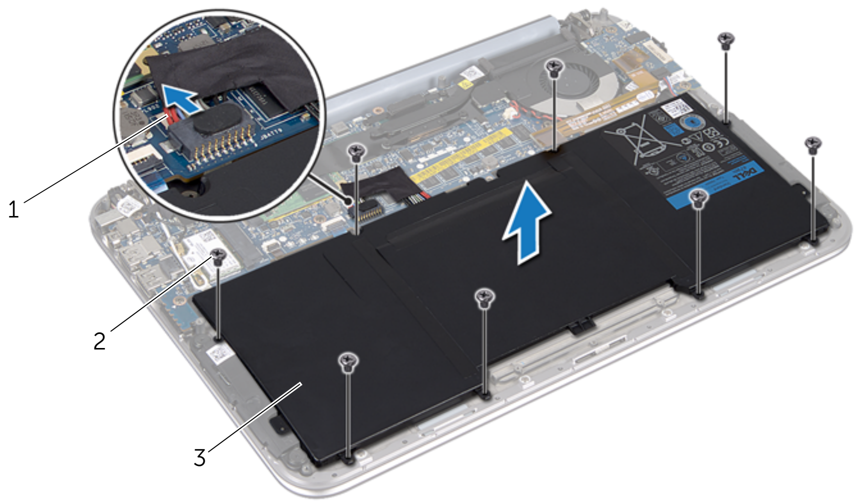
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Prerequisites

Remove the base cover. See "Removing the Base Cover" on page 10.

Procedure

1. Disconnect the battery cable from the system-board connector.
2. Remove the screws that secure the battery to the palm-rest assembly.
3. Lift the battery, along with its cable, off the palm-rest assembly.



1	battery cable	2	screws (8)
3	battery		

4. Slide and hold the power switch for about 5 seconds to ground the system board.

Replacing the Battery

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Procedure

1. Align the screw holes on the battery with the screw holes on the palm-rest assembly.
2. Replace the screws that secure the battery to the palm-rest assembly.
3. Connect the battery cable to the system board connector.

Postrequisites

1. Replace the base cover. See "Replacing the Base Cover" on page 12.
2. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Wireless Mini-Card

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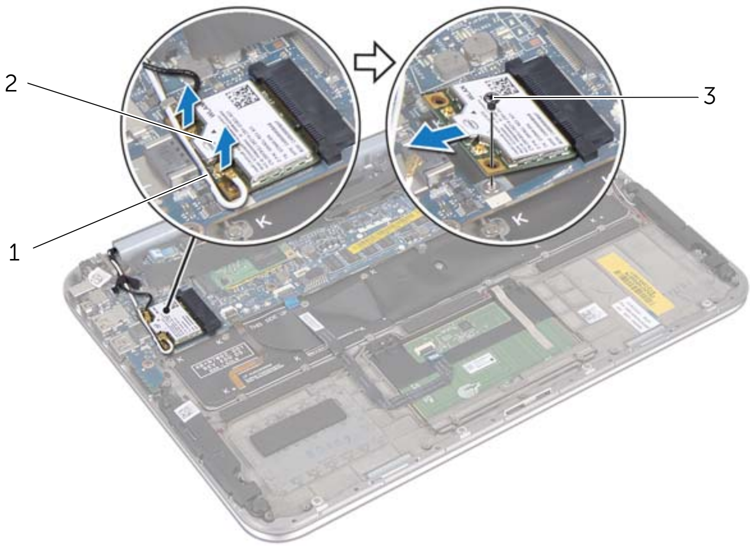
If you ordered a wireless mini-card with your computer, the card is already installed.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

1. Disconnect the antenna cables from connectors on the wireless mini-card.
2. Remove the screw that secures the wireless mini-card to the wireless mini-card connector.
3. Lift the wireless mini-card out of the wireless mini-card connector.



1	antenna cables (2)	2	wireless mini-card
3	screw		

Replacing the Wireless Mini-Card

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NOTE: Dell does not guarantee compatibility or provide support for wireless mini-cards from sources other than Dell.

Your computer has one, half-height wireless mini-card slot which supports a Wireless Local Area Network (WLAN) + Bluetooth combo card.

Procedure

1. Align the notch on the wireless mini-card with the tab on the wireless mini-card connector.

CAUTION: Use firm and even pressure to slide the wireless mini-card into place. If you use excessive force, you may damage the connector.

CAUTION: The connectors are keyed to ensure correct insertion. If you feel resistance, check the connectors on the wireless mini-card and on the wireless system-board connector, and realign the wireless mini-card.

CAUTION: To avoid damage to the wireless mini-card, never place cables under the wireless mini-card.

2. Insert the wireless mini-card at a 45-degree angle into the wireless mini-card connector.
3. Press the other end of the wireless mini-card down and replace the screw that secures the wireless mini-card to the wireless mini-card connector.
4. Connect the antenna cables to the connectors on the wireless mini-card.

   The following table provides the antenna-cable color scheme for the wireless mini-card supported by your computer.

Connectors on the wireless mini-card	Antenna-Cable Color Scheme
WLAN + Bluetooth (2 cables)	
Main WLAN + Bluetooth (white triangle)	white
Auxiliary WLAN + Bluetooth (black triangle)	black

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.

3 Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the mSATA Card

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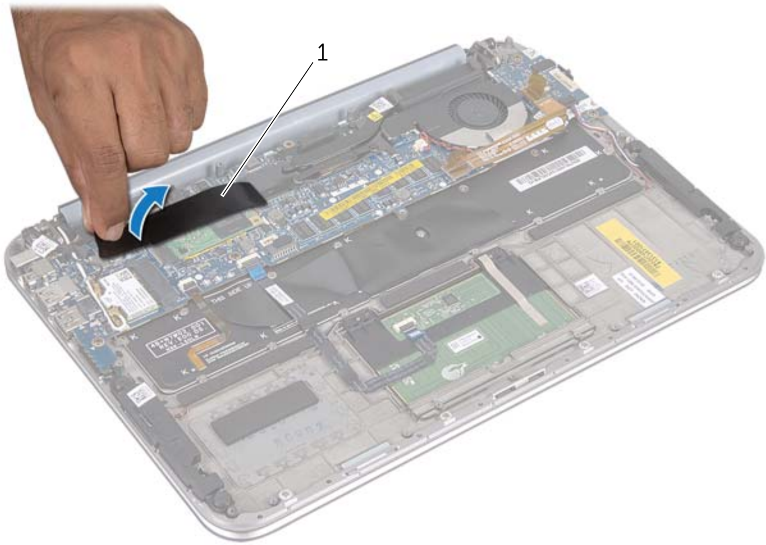
Prerequisites

1 Remove the base cover. See "Removing the Base Cover" on page 10.

2 Remove the battery. See "Removing the Battery" on page 13.

Procedure

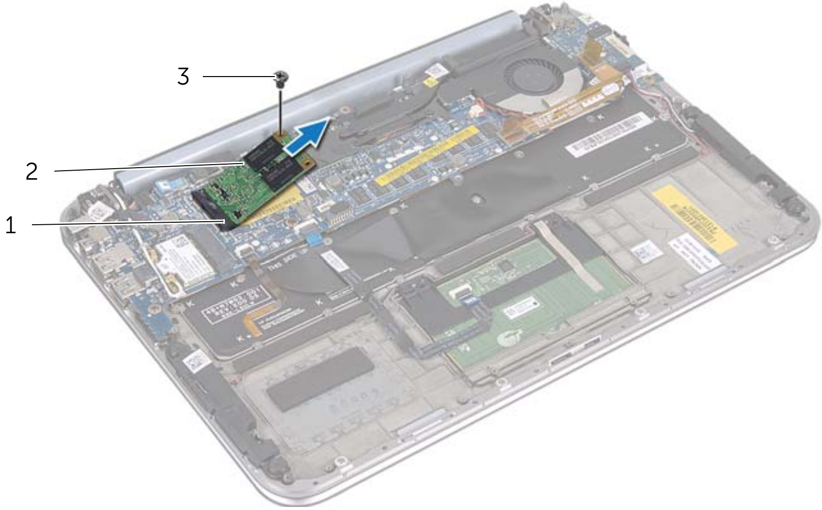
1 Peel the mylar from the mSATA card.



1	mylar

2 Remove the screw that secures the mSATA card to the mSATA-card connector.

3 Lift the mSATA card out of the mSATA-card connector.



1	mSATA-card connector	2	mSATA card
3	screw		

Replacing the mSATA Card

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Procedure

1. Align the notch on the mSATA card with the tab on the mSATA-card connector.
2. Insert the mSATA card at a 45-degree angle into the mSATA-card connector.
3. Press the other end of the mSATA card down and replace the screw that secures the mSATA card to the mSATA-card connector.
4. Adhere the mylar to the mSATA card.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Speakers

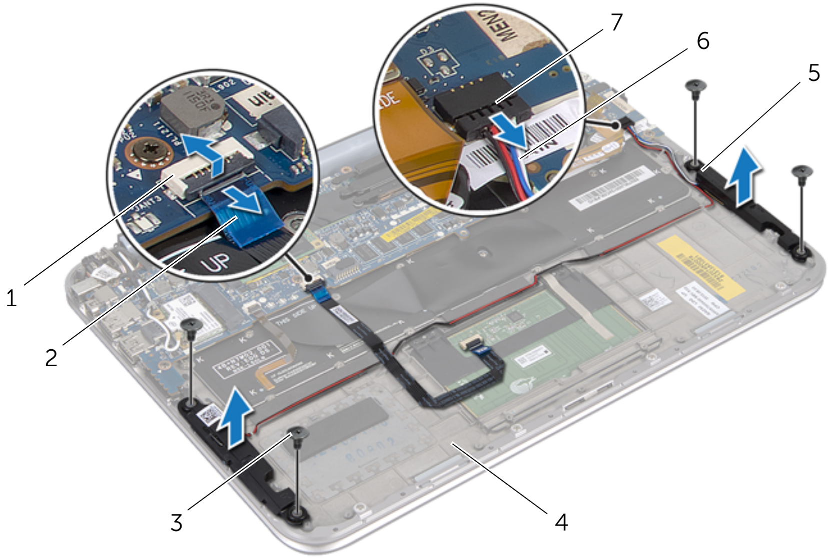
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Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

1. Lift the connector latch and disconnect the touchpad cable from the system-board connector.
2. Move the touchpad cable away from the speakers cable.
3. Disconnect the speaker cable from the I/O-board connector.
4. Remove the screws that secure the speakers to the palm-rest assembly.
5. Note the routing of the speakers cable and remove it from the routing guides on the palm-rest assembly.
6. Lift the speakers, along with the speakers cable, away from the palm-rest assembly.



1	touchpad cable-connector	2	touchpad cable
3	screws (4)	4	palm-rest assembly
5	speakers (2)	6	speakers cable
7	speakers cable-connector		

Replacing the Speakers

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Procedure

1. Use the alignment posts on the palm-rest assembly to place the speakers in position.

   NOTE: Ensure that the speakers are secured by the alignment posts.
2. Replace the screws that secure the speakers to the palm-rest assembly.
3. Route the speaker cable through the routing guides on the palm-rest assembly.
4. Connect the speakers cable to the I/O-board connector.
5. Slide the touchpad cable into the system-board connector and press down on the connector latch to secure the cable.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Coin-Cell Battery

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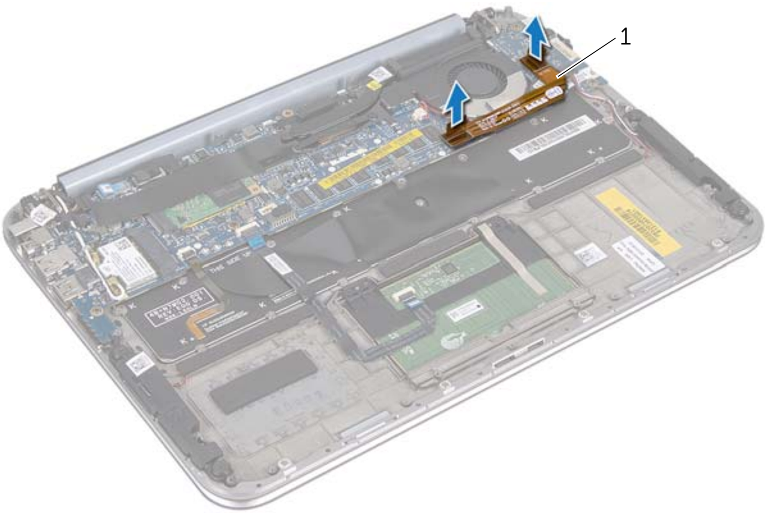
△ **CAUTION: Removing the coin-cell battery resets the BIOS settings to default. It is recommended that you note the BIOS settings before removing the coin-cell battery.**

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

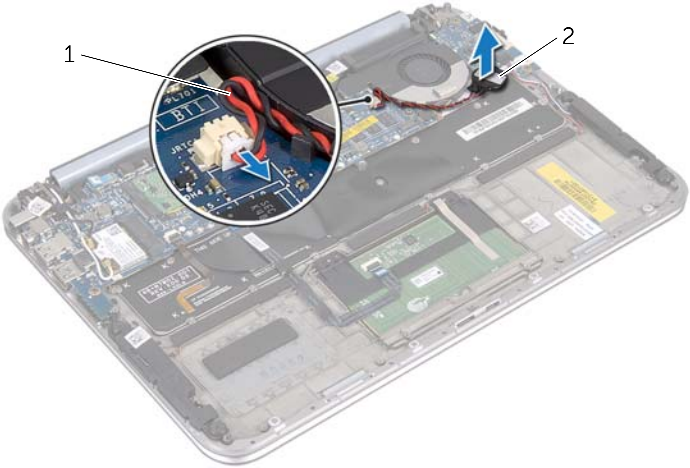
1. Disconnect the I/O-board cable from the system board.



1	I/O-board cable

2. Disconnect the coin-cell-battery cable from the system board.
3. Note the coin-cell-battery cable routing and remove the cable from the routing guides.

4 Peel the coin-cell battery off the keyboard.
5 Lift the coin-cell battery along with its cable off the keyboard.



1	coin-cell-battery cable	2	coin-cell battery

Replacing the Coin-Cell Battery

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WARNING: The battery may explode if installed incorrectly. Replace the battery only with the same or equivalent type. Discard used batteries according to the manufacturer's instructions.

Procedure

1. Adhere the coin-cell battery to the keyboard.
2. Route the coin-cell-battery cable through the routing guides.
3. Connect the coin-cell-battery cable and I/O-board cable to the system board.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Fan

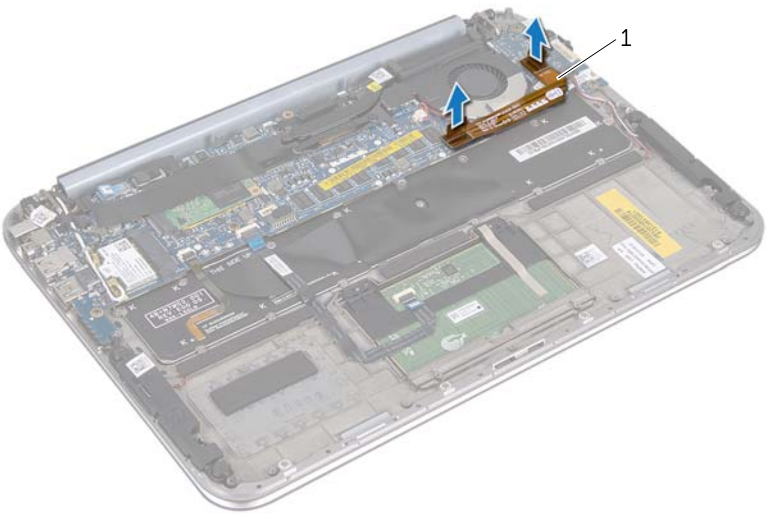
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Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

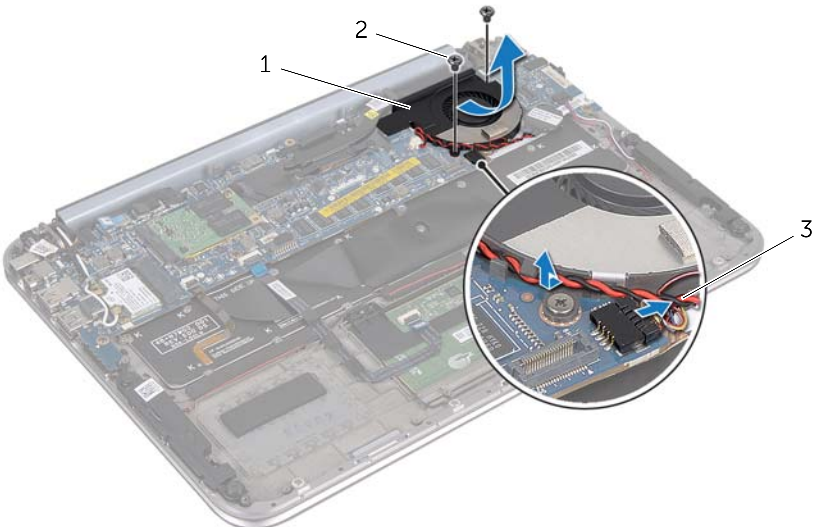
1. Disconnect the I/O-board cable from the I/O board and system board, and lift the cable away from the computer.



1	I/O-board cable

2. Note the coin-cell-battery cable routing and remove the cable from the routing guides.
3. Disconnect the fan cable from the system-board connector.
4. Remove the screws that secure the fan to the keyboard.

5 Slide and lift the fan, along with its cable, away from the keyboard.



1	fan	2	screws (2)
3	fan cable		

Replacing the Fan

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Procedure

1. Slide the tab on the fan under the heat sink, and align the screw holes on the fan with the screw holes on the keyboard.
2. Replace the screws that secure the fan to the keyboard.
3. Connect the fan cable to the system-board connector.
4. Route the coin-cell-battery cable through the routing guides.
5. Connect the I/O-board cable to the connectors on the I/O board and system board.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Processor Heat-Sink

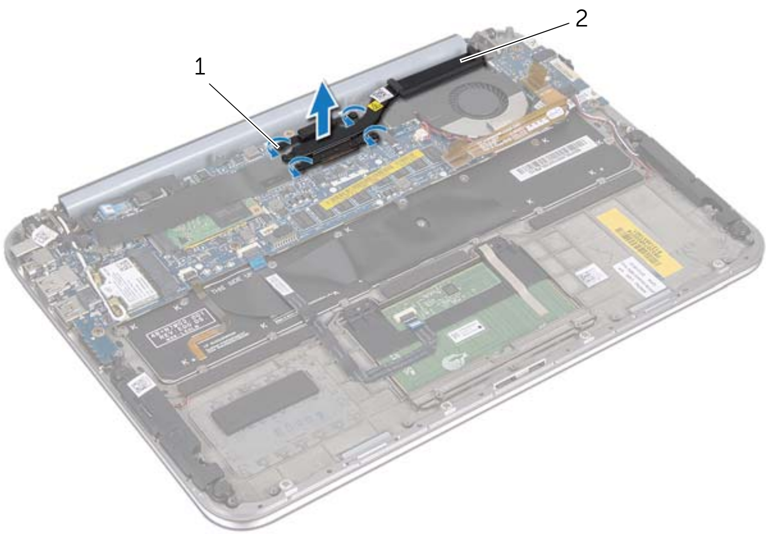
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Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

1. In sequential order (indicated on the processor heat-sink), loosen the captive screws that secure the processor heat-sink to the system-board assembly.
2. Lift the processor heat-sink off the system-board assembly.



1	captive screws (4)	2	processor heat-sink

Replacing the Processor Heat-Sink

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Procedure

NOTE: The original thermal grease can be reused, if the original system board and heat sink are reinstalled together. If either the system board or the heat sink is replaced, use the thermal pad provided in the kit to ensure that thermal conductivity is achieved.

1. Align the captive screws on the processor heat-sink with the screw holes on the system board.
2. In sequential order (indicated on the processor heat-sink), tighten the captive screws that secure the processor heat-sink to the system board.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the I/O Board

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Prerequisites

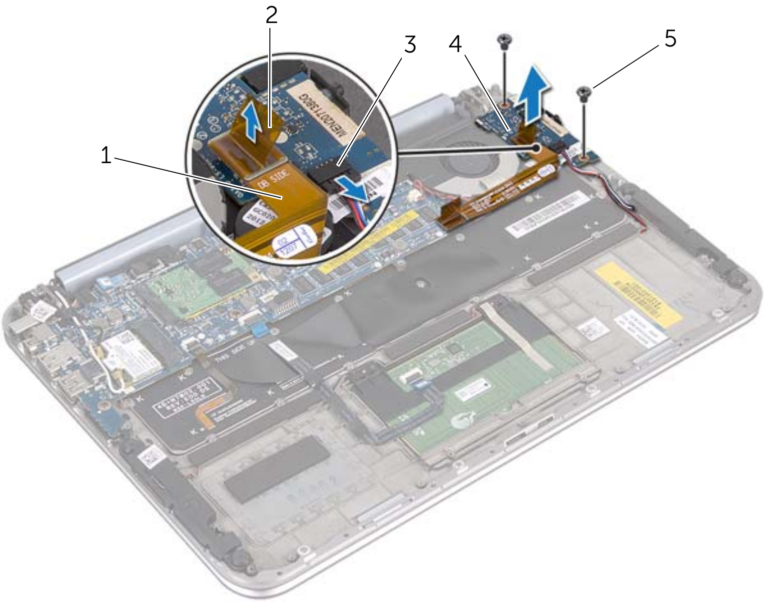
1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

1. Using the pull tab disconnect the I/O-board cable.
2. Disconnect the speakers cable from the I/O board.

3 Remove the screws that secure the I/O board to the palm-rest assembly.

4 Lift the I/O board away from the palm-rest assembly.



1	I/O-board cable	2	pull tab
3	speakers-cable connector	4	I/O board
5	screws (2)		

Replacing the I/O Board

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Procedure

NOTE: The power switch must be in its default position before replacing the I/O board.

1 Align the screw holes on the I/O board with the screw holes on the palm-rest assembly.
2 Replace the screws that secure the I/O board to the palm-rest assembly.
3 Connect the speakers cable to the connector on the I/O board.
4 Connect the I/O-board cable to the connector on the I/O board.

Postrequisites

1 Replace the battery. See "Replacing the Battery" on page 14.
2 Replace the base cover. See "Replacing the Base Cover" on page 12.
3 Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Power-Adapter Port

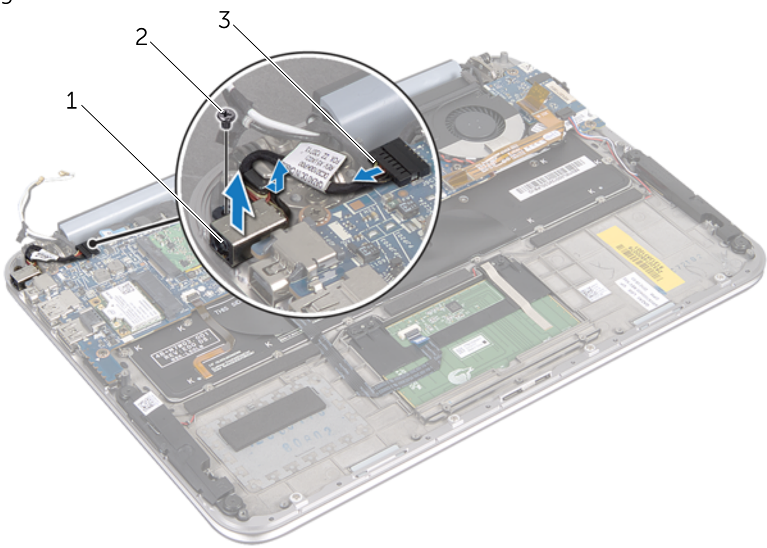
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Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

1. Disconnect the antenna cables from the wireless mini-card. See "Removing the Wireless Mini-Card" on page 15.
2. Note the antenna-cable routing and remove the antenna cables from the routing guides on the system board.
3. Disconnect the power-adapter port cable from the system-board connector.
4. Remove the screw that secures the power-adapter port to the palm-rest assembly.
5. Lift the power-adapter port and slide it to remove its cable from under the display hinge.



1	power-adapter port	2	screw
3	power-adapter port cable		

Replacing the Power-Adapter Port

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Procedure

1. Slide the power-adapter port cable under the display hinge.
2. Align the screw hole on the power-adapter port with the screw hole on the palm-rest assembly.
3. Replace the screw that secures the power-adapter port to the palm-rest assembly.
4. Connect the power-adapter port cable to the system-board connector.
5. Route the antenna cables through the routing guide on the system board.
6. Connect the antenna cables to the wireless mini-card.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the System Board

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Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.
3. Remove the wireless mini-card. See "Removing the Wireless Mini-Card" on page 15.
4. Remove the mSATA card. See "Removing the mSATA Card" on page 19.
5. Remove the fan. See "Removing the Fan" on page 28.
6. Remove the processor heat-sink. See "Removing the Processor Heat-Sink" on page 28.

Procedure

NOTE: Your computer's Service Tag is located under the system badge. You must enter the Service Tag in the BIOS after you replace the system board.

NOTE: Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect them correctly after you replace the system board.

1 Disconnect the coin-cell battery cable. See"Removing the Coin-Cell Battery" on page 25.

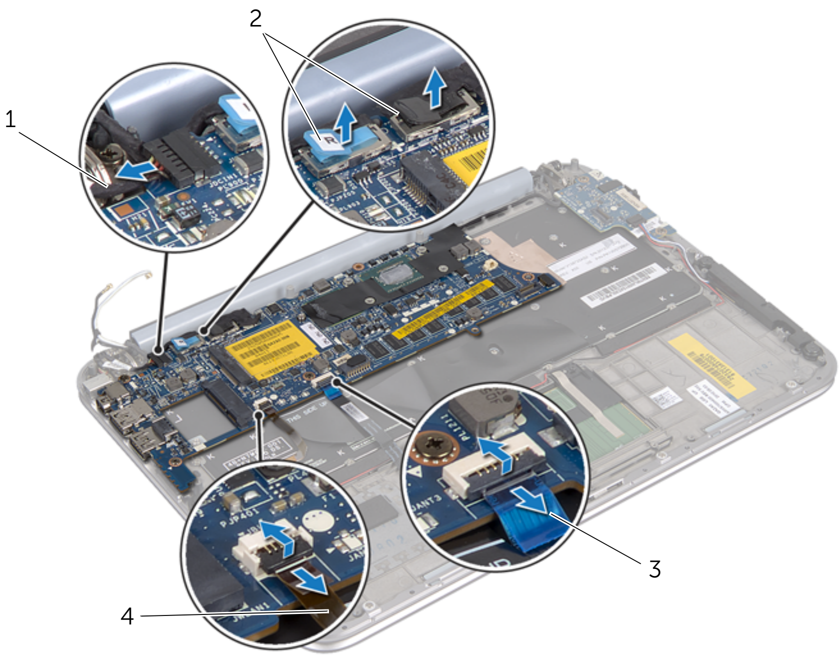
2 Disconnect the power-adapter port cable from the system board.

3 Using the pull tabs disconnect the display cables from the system board.

4 Lift the connector latches and using the pull tabs disconnect the touchpad cable and keyboard-backlit cable from the system-board connectors.

5 Remove the antenna cables from the routing guide on the system board.
See "Removing the Wireless Mini-Card" on page 15.

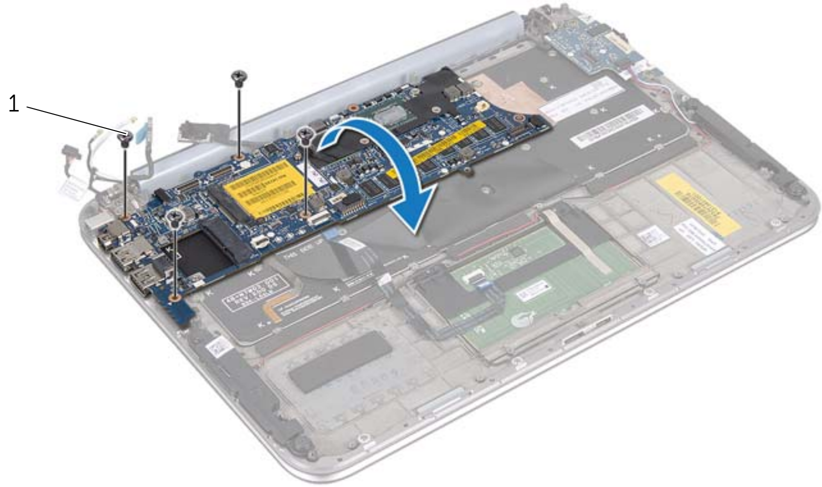
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1	power-adapter port cable	2	display cables
3	touchpad cable	4	keyboard-backlit cable

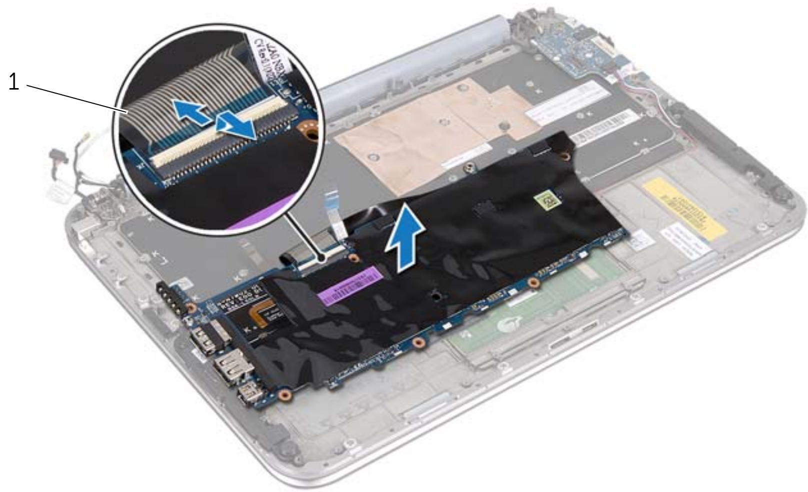
6 Remove the screws that secure the system board to the palm-rest assembly.

7 Carefully lift the system board and turn it over.



1	screws (4)

8 Lift the connector latch and disconnect the keyboard cable from the system-board connector.



1	keyboard cable

1	keyboard cable

9 Lift the system board off the palm-rest assembly.

Replacing the System Board

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Procedure

1. Slide the keyboard cable into the system-board connector and press down on the connector latch to secure the cable.
2. Turn the system board over and align the screw holes on the system board with the screw holes on the palm-rest assembly.

   CAUTION: Ensure that no cables are under the system board.
3. Replace the screws that secure the system board to the palm-rest assembly.
4. Connect the coin-cell battery cable.
5. Connect the power-adapter port cable to the system board.
6. Connect the touchscreen cable and display cable to the system board.
7. Route the antenna cables through the routing guide on the system board.
8. Slide the touchpad cable and keyboard-backlit cable into their connectors on the system board and press down on the connector latches to secure the cables.

Postrequisites

1. Replace the processor heat-sink. See "Replacing the Processor Heat-Sink" on page 29.
2. Replace the fan. See "Replacing the Fan" on page 30.
3. Replace the mSATA card. See "Replacing the mSATA Card" on page 21.
4. Replace the wireless mini-card. See "Replacing the Wireless Mini-Card" on page 17.
5. Replace the battery. See "Replacing the Battery" on page 14.
6. Replace the base cover. See "Replacing the Base Cover" on page 12.
7. Follow the instructions in "After Working Inside Your Computer" on page 9.

Entering the Service Tag in the BIOS

1. Turn on the computer.
2. Press <F2> during POST to enter the system setup program.
3. Navigate to the main tab and enter the Service Tag in the **Service Tag** field.

Removing the Display Assembly

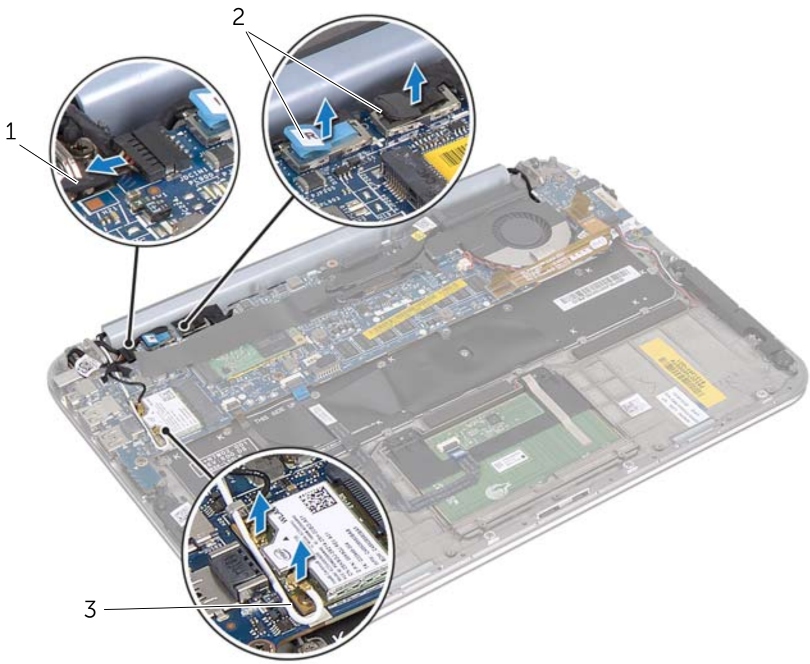
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Prerequisites

1 Remove the base cover. See "Removing the Base Cover" on page 10.
2 Remove the battery. See "Removing the Battery" on page 13.

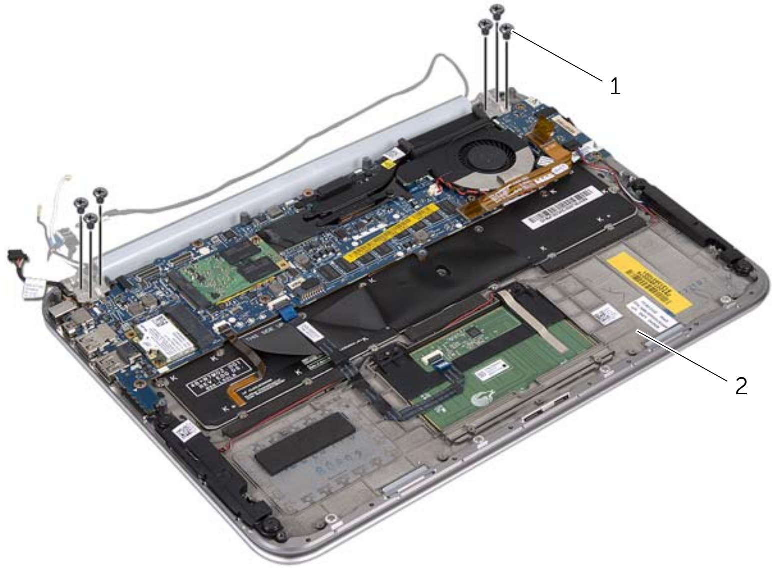
Procedure

1 Disconnect the power-adapter port cable from the system board.
2 Using the pull tabs disconnect the display cables from the system board.
3 Disconnect the antenna cables from the connectors on the wireless mini-card.



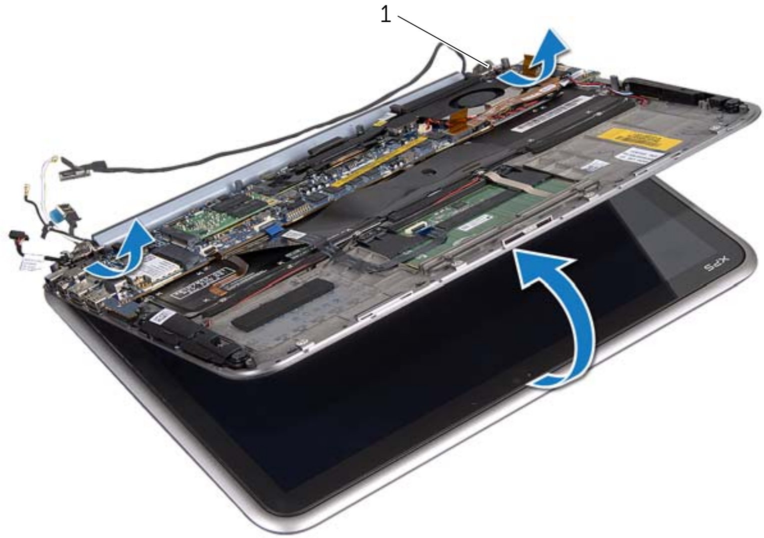
1	power-adapter port cable	2	display cables
3	antenna cables		

4 Remove the screws that secure the display assembly to the palm-rest assembly.



1	screws (6)	2	palm-rest assembly

5 Carefully lift the palm-rest assembly at an angle and slide the palm-rest assembly to release the tabs on the palm-rest assembly from the display hinges.



1	display hinges (2)

Replacing the Display Assembly

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Procedure

1. Slide the tabs on the palm-rest assembly into the slots on the display hinges.
2. Replace the screws that secure the display assembly to the palm-rest assembly.
3. Connect the antenna cables to the wireless mini-card.
4. Connect the power-adapter port cable and display cables to the system board.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Display Back-Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 7. After working inside your computer, follow the instructions in "After Working Inside Your Computer" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

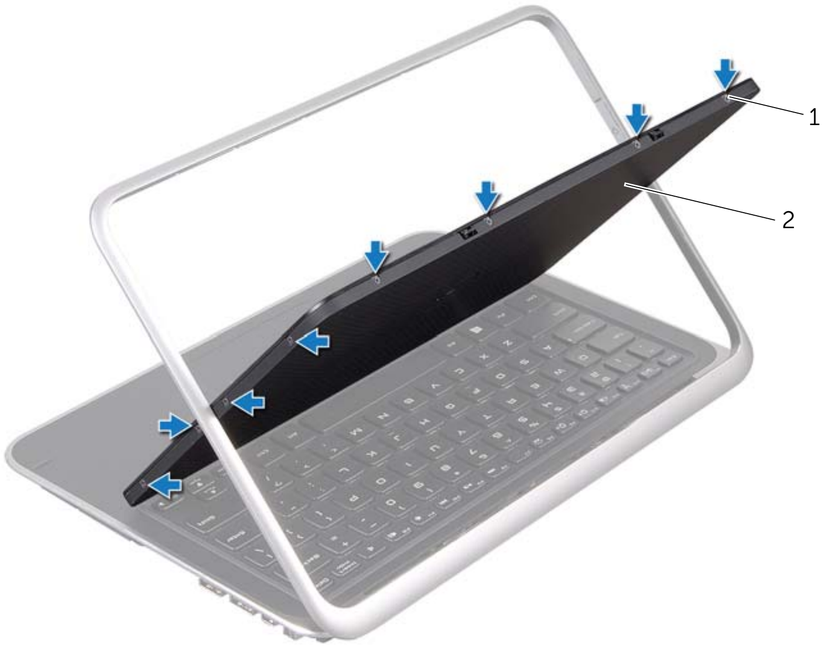
1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.

Procedure

1. Turn the computer over and open the display as far as possible.
2. Rotate the display panel to a 45-degree angle.
3. Remove the screws that secure the display back-cover to the display panel.



1	screws (8)	2	display back-cover



1	screws (8)	2	display back-cover

4 Carefully pry the display back-cover off the display panel.

Replacing the Display Back-Cover

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Procedure

1. Place the display back-cover on the display panel and snap it into place.
2. Replace the screws that secure the display back-cover to the display panel.

Postrequisites

1. Replace the battery. See "Replacing the Battery" on page 14.
2. Replace the base cover. See "Replacing the Base Cover" on page 12.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Camera Module

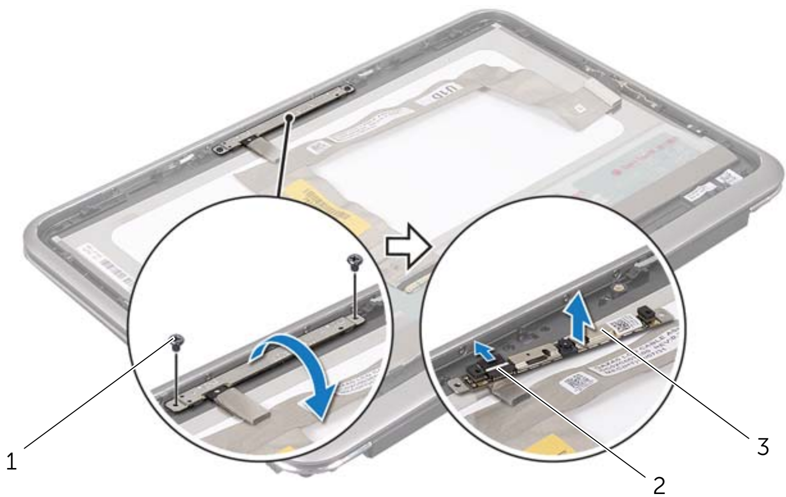
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Prerequisites

1 Remove the base cover. See "Removing the Base Cover" on page 10.
2 Remove the battery. See "Removing the Battery" on page 13.
3 Remove the display back-cover. See "Removing the Display Back-Cover" on page 47.

Procedure

1 Remove the screws that secure the camera module to the display panel.
2 Turn the camera module over and disconnect the camera cable from the connector on the camera module.
3 Carefully lift the camera module off the display panel.



1	screws (2)	2	camera cable-connector
3	camera module		

Replacing the Camera Module

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Procedure

1. Connect the camera cable to the connector on the camera module.
2. Use the alignment posts to place the camera module on the display panel.
3. Replace the screws that secure the camera module to the display panel.

Postrequisites

1. Replace the display back-cover. See "Replacing the Display Back-Cover" on page 49.
2. Replace the battery. See "Replacing the Battery" on page 14.
3. Replace the base cover. See "Replacing the Base Cover" on page 12.
4. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Windows-Button Board

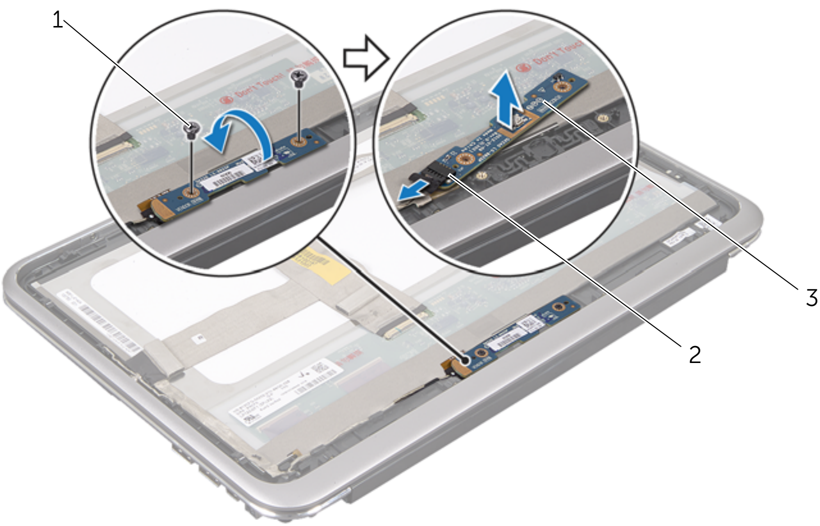
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 7. After working inside your computer, follow the instructions in "After Working Inside Your Computer" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.
3. Remove the display back-cover. See "Removing the Display Back-Cover" on page 47.

Procedure

1. Remove the screws that secure the windows-button board to the display panel.
2. Turn the windows-button board over and disconnect the windows-button board cable from the connector on the windows-button board.
3. Carefully lift the windows-button board off the display panel.



1	screws (2)	2	windows-button board cable connector
3	windows-button board		

Replacing the Windows-Button Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 7. After working inside your computer, follow the instructions in "After Working Inside Your Computer" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Procedure

1. Connect the windows-button board cable to the connector on the windows-button board.
2. Use the alignment posts to place the windows-button board on the display panel.
3. Replace the screws that secure the windows-button board to the display panel.

Postrequisites

1. Replace the display back-cover. See "Replacing the Display Back-Cover" on page 49.
2. Replace the battery. See "Replacing the Battery" on page 14.
3. Replace the base cover. See "Replacing the Base Cover" on page 12.
4. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Display Panel

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 7. After working inside your computer, follow the instructions in "After Working Inside Your Computer" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover. See "Removing the Base Cover" on page 10.
2. Remove the battery. See "Removing the Battery" on page 13.
3. Remove the display back-cover. See "Removing the Display Back-Cover" on page 47.
4. Remove the camera module. See "Removing the Camera Module" on page 50.
5. Remove the windows-button board. See "Removing the Windows-Button Board" on page 54.

Procedure

1. Disconnect the display cable from the display panel.



1	display panel	2	display cable

2 Peel off the display cable from the display panel.



3 Remove the screws that secure the display panel to the display bezel.

4 Slide and lift the display panel off the display bezel.



1	display panel	2	display bezel
3	screws (4)		

Replacing the Display Panel

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Procedure

1. Slide the display panel and align the screw holes on the display panel with the screw holes on the display bezel.
2. Replace the screws that secure the display panel to the display bezel.
3. Adhere the display cable to the display panel.
4. Connect the display cable to the connector on the display panel.

Postrequisites

1. Replace the windows-button board. See "Replacing the Windows-Button Board" on page 56.
2. Replace the camera module. See "Replacing the Camera Module" on page 52.
3. Replace the display back-cover. See "Replacing the Display Back-Cover" on page 49.
4. Replace the battery. See "Replacing the Battery" on page 14.
5. Replace the base cover. See "Replacing the Base Cover" on page 12.
6. Follow the instructions in "After Working Inside Your Computer" on page 9.

Removing the Keyboard

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "Before You Begin" on page 7. After working inside your computer, follow the instructions in "After Working Inside Your Computer" on page 9. For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

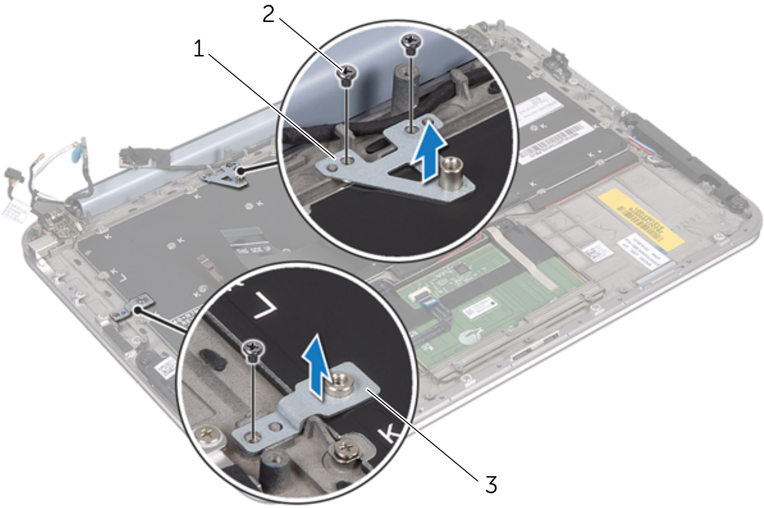
Prerequisites

1. Remove the I/O board. See "Removing the I/O Board" on page 33.
2. Remove the system board. See “Removing the System Board” on page 38.

Procedure

1 Remove the screws that secure the WLAN bracket and mSATA bracket to the palm-rest assembly.

2 Lift the WLAN bracket and mSATA bracket off the keyboard.

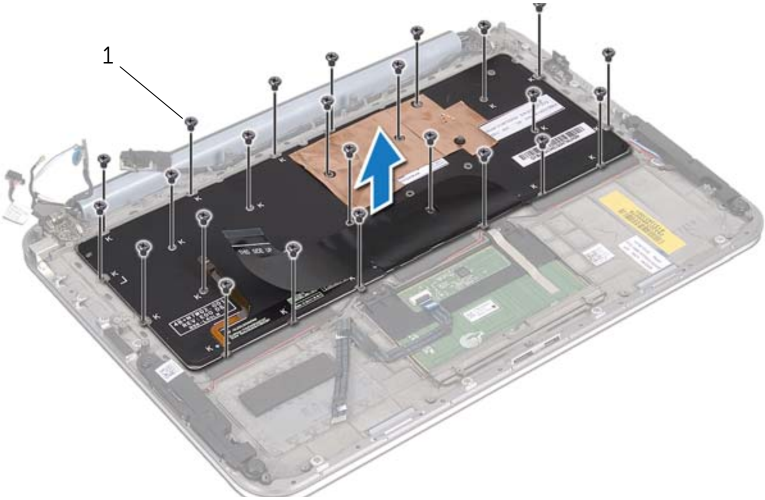


1	mSATA bracket	2	screws (3)
3	WLAN bracket		

△ **CAUTION: The keycaps on the keyboard are fragile, easily dislodged, and time-consuming to replace. Be careful when removing and handling the keyboard.**

3 Remove the screws that secure the keyboard to the palm-rest assembly.

4 Lift the keyboard off the palm-rest assembly.



1	screws (24)

Replacing the Keyboard

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Procedure

1. Align the screw holes on the keyboard with the screw holes on the palm-rest assembly.
2. Replace the screws that secure the keyboard to the palm-rest assembly.
3. Align the screw holes on the WLAN bracket and mSATA bracket with the screw holes on the palm-rest assembly.
4. Replace the screws that secure the WLAN bracket and mSATA bracket to the palm-rest assembly.

Postrequisites

1. Replace the I/O board. See "Replacing the I/O Board" on page 35.
2. Replace the system board. See “Replacing the System Board” on page 42.
3. Follow the instructions in "After Working Inside Your Computer" on page 9.

Flashing the BIOS

The BIOS requires flashing when an update is available or when replacing the system board.

To flash the BIOS:

1. Turn on the computer.
2. Go to **support.dell.com/support/downloads**.
3. Locate the BIOS update file for your computer:

   NOTE: The Service Tag for your computer is located on a label beneath the system badge at the back of your computer. For more information on locating the Service Tag, see the *Quick Start Guide* that shipped with your computer.

   If you have your computer's Service Tag or Express Service Code:

   a. Enter your computer's Service Tag or Express Service Code in the **Service Tag or Express Service Code** field**.**
   b. Click **Submit** and proceed to step 4.

   If you do not have your computer's Service Tag or Express Service Code:

   a. Select one of the following options:
      - **Automatically detect my Service Tag for me**
      - **Choose from My Products and Services List**
      - **Choose from a list of all Dell products**
   b. Click **Continue** and follow the instructions on the screen.
4. A list of results appears on the screen. Click **BIOS**.
5. Click **Download File** to download the latest BIOS file.
6. In the **Please select your download method below** window, click **For Single File Download via Browser**, and then click **Download Now**.
7. In the **Save As** window, select an appropriate location to download the file on your computer.
8. If the **Download Complete** window appears, click **Close**.
9. Navigate to the folder where you downloaded the BIOS update file.
10. Double-click the BIOS update file icon and follow the instructions that appear on the screen.